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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/658,880	09/11/2000	Marco Di Benedetto	112025-0198	4991

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EXAMINER	
MEW, KEVIN D	

ART UNIT	PAPER NUMBER
2664	

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/658,880	BENEDETTO ET AL.
	Examiner	Art Unit
	Kevin Mew	2664

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 June 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 5-20* is/are pending in the application.

4a) Of the above claim(s) *4* is/are withdrawn from consideration.

5)☒ Claim(s) *20* is/are allowed.

6)☒ Claim(s) *1-3 and 6-19* is/are rejected.

7)☒ Claim(s) *5* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Final Action

Response to Amendment

1. Applicant's arguments filed on June 23, 2004 regarding claims 1-10 have been fully considered and are currently pending. Claims 11-20 have been added by the applicant. Claim 4 has been canceled by the Applicant.

2. Acknowledgement is made of the amended claims in response to the 35 U.S.C. 112 rejections to claims 6 and 8. The amended claims are acceptable and the 35 U.S.C. 112 rejections have been now withdrawn.

3. Acknowledgement is made of the argument regarding the 35 U.S.C. 101 rejection to claim 10. The argument is persuasive and the 35 U.S.C. 101 rejection has been withdrawn.

Specification

4. Claim 11 is objected to because of the following informalities:

Replace the term "is" with "are" in line 2 of claim 11.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-3, 5-10, 12-13, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldman et al. (US Patent 6,628,661).

Regarding claims 1-3, 5-7, 12-13, 19, Goldman discloses a layer 2 switch (**a switch such as a bridge**, see lines 21-22, col. 5, and A1, Fig. 3) in a computer network (**a network**, see lines 15-16 and 39-40, col. 5, and Fig. 3; note that element 30 is core network and element A1 is customer network in Fig. 3), comprising methods and processes to provide:

a plurality of ports (**see perimeter port coming out of switch A1 and connecting switch A0 and perimeter port coming out of switch A1 and connecting switch A2**, Fig. 3), at least one port of said plurality of ports capable of being set to a status of root guard protected (RG status) (**switch A1 is set with a particular priority value that is greater than zero according to the distance-to-core method and a priority value greater than zero is interpreted as root guard protected status; note that a priority value only priority value of zero would be considered as candidate for the choice of root**, see lines 60-67, col. 6);

first circuits as the means for running the spanning tree protocol (STP) in said layer 2 switch (**a digital electronic circuitry for implementing the invention, comprising running the conventional spanning tree algorithm to determine the MAC address of each switch**, see

lines 61-67, col. 5 and lines 61-67, col. 8), said STP capable of selecting said at least one port as either a designated port or as a root port (**the switch that happens to have the lowest MAC address will be given the highest priority and thus will be chosen as the spanning tree's root**, see lines 65-67, col. 5 and line 1, col. 6);

second circuits as the means for running root guard protocol (**a digital electronic circuitry for implementing the invention, comprising the exchange heartbeat protocol frames between switches for determining the distance-to-core/priority value**, see lines 61-67, col. 8 and lines 41-50, col. 6), and said root guard protocol (**heartbeat protocol**) determining whether or not a port set to RG status has been selected by STP as a root port (**a digital electronic circuitry for implementing the invention, comprising exchanging and reconciling heartbeat frames for determining both the priority value (RG status) and MAC address where the lowest MAC address would be selected by STP as the root**, see lines 10-13, col. 7).

Goldman does not explicitly disclose using blocking circuits as the means to set said at least one port into blocked status, said blocking circuits setting said at least one port into blocked status in response to said at least one port being both in root guard protected status and selected by STP as a root port.

However, Goldman discloses that the state information made available to switches through the heartbeat protocol can be used to reconfigure a switch's port from forwarding state to blocking state (see lines 1-6 and 61-67, col. 8). It is interpreted that when the switch disclosed in Goldman has a non-zero distance-to-core value greater than zero, the switch will be considered to obtain a root guard protected status. This non-zero distance-to-core value is interpreted as the root guard status. When non-zero priority values are assigned to a switch to

indicate the switch obtains a root guard protected status, all the ports that are associated with that switch will also considered to have root guard protected status because a switch transmits and receives data via its ports. As a result, having a switch that has root guard protected status will teach/suggest that all the ports will have root guard protected status. Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to modify the switch of Goldman such that the port state of the switch with priority value greater than one (root guard protected status) would be reconfigured from a forwarding state to a blocking state by a digital electronic circuitry such as the port status change due to the heartbeat protocol and the digital electronic circuitry taught by Goldman. The motivation to do so is to center the spanning tree at the network's core to provide significant increases in the speed and efficiency with which the network traffic can be handled because the higher volume of network traffic passing through or near the root is processed by the highest bandwidth resources in the network.

Regarding claim 8, Goldman discloses all the aspects of the claimed invention set forth in the rejection of claim 7 above. In addition, Goldman discloses a programmable processor for:

executing a process (**executing a program of instructions**) in a CPU control engine (**programmable processor**) to set said perimeter port to a status of root guard protected;

executing a process (**executing a program of instructions**) in said CPU control engine (**programmable processor**) to run said spanning tree protocol; and,

executing a process (**executing a program of instructions**) in said CPU control engine (**programmable processor**) to execute said root guard protocol (**the method steps of the**

invention be performed by a programmable processor executing a program of instructions to perform functions of the invention, see lines 66-67, col. 8 and lines 1-2, col. 9).

Regarding claim 9, Goldman discloses all the aspects of the claimed invention set forth in the rejection of claim 7 above. In addition, Goldman discloses a computer readable memory device (**a data storage device**), comprising: said computer readable memory device (**a data storage device**) containing instructions for practice of the method of claim 7 (**one or more computer programs that are executable on a programmable system including a programmable processor coupled to retrieve instructions from and transmit instructions to a data storage system**, see lines 3-8, col. 9).

Regarding claim 10, Goldman discloses all the aspects of the claimed invention set forth in the rejection of claim 7 above. In addition, Goldman discloses electromagnetic signals propagated over a computer network, comprising: said electromagnetic signals having instructions (**retrieve instructions from and transmit instructions to a data storage system**; note that electromagnetic signals having instructions are interpreted here as data bits) for practice of the method of claim 7 (**one or more computer programs that are executable on a programmable system including a programmable processor coupled to retrieve instructions from and transmit instructions to a data storage system**, see lines 3-8, col. 9).

6. Claims 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldman et al. in view of Maas et al. (USP 5,450,486).

Regarding claims 14, Goldman discloses a layer 2 switch (**a switch such as a bridge**, see lines 21-22, col. 5, and A1, Fig. 3) in a computer network (**a network**, see lines 15-16 and 39-40, col. 5, and Fig. 3; note that element 30 is core network and element A1 is customer network in Fig. 3), comprising methods and processes to provide:

a plurality of ports (**see perimeter port coming out of switch A1 and connecting switch A0 and perimeter port coming out of switch A1 and connecting switch A2**, Fig. 3), at least one port of said plurality of ports capable of being set to a status of root guard protected (RG status) (**switch A1 is set with a particular priority value that is greater than zero according to the distance-to-core method and a priority value greater than zero is interpreted as root guard protected status; note that a priority value only priority value of zero would be considered as candidate for the choice of root**, see lines 60-67, col. 6);

first circuits as the means for running the spanning tree protocol (STP) in said layer 2 switch (**a digital electronic circuitry for implementing the invention, comprising running the conventional spanning tree algorithm to determine the MAC address of each switch**, see lines 61-67, col. 5 and lines 61-67, col. 8), said STP capable of selecting said at least one port as either a designated port or as a root port (**the switch that happens to have the lowest MAC address will be given the highest priority and thus will be chosen as the spanning tree's root**, see lines 65-67, col. 5 and line 1, col. 6);

second circuits as the means for running root guard protocol (**a digital electronic circuitry for implementing the invention, comprising the exchange heartbeat protocol**

frames between switches for determining the distance-to-core/priority value, see lines 61-67, col. 8 and lines 41-50, col. 6), and said root guard protocol (**heartbeat protocol**) determining whether or not a port set to RG status has been selected by STP as a root port (**a digital electronic circuitry for implementing the invention, comprising exchanging and reconciling heartbeat frames for determining both the priority value (RG status) and MAC address where the lowest MAC address would be selected by STP as the root**, see lines 10-13, col. 7).

Goldman does not explicitly disclose using blocking circuits as the means to set said at least one port into blocked status, said blocking circuits setting said at least one port into blocked status in response to said at least one port being both in root guard protected status and selected by STP as a root port.

However, Goldman discloses that the state information made available to switches through the heartbeat protocol can be used to reconfigure a switch's port from forwarding state to blocking state (see lines 1-6 and 61-67, col. 8). It is interpreted that when the switch disclosed in Goldman has a non-zero distance-to-core value greater than zero, the switch will be considered to obtain a root guard protected status. This non-zero distance-to-core value is interpreted as the root guard status. When non-zero priority values are assigned to a switch to indicate the switch obtains a root guard protected status, all the ports that are associated with that switch will also considered to have root guard protected status because a switch transmits and receives data via its ports. As a result, having a switch that has root guard protected status will teach/suggest that all the ports will have root guard protected status. Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to modify the switch of Goldman such that the port state of the switch with priority value greater than one (root

guard protected status) would be reconfigured from a forwarding state to a blocking state by a digital electronic circuitry such as the port status change due to the heartbeat protocol and the digital electronic circuitry taught by Goldman. The motivation to do so is to center the spanning tree at the network's core to provide significant increases in the speed and efficiency with which the network traffic can be handled because the higher volume of network traffic passing through or near the root is processed by the highest bandwidth resources in the network.

Goldman does not explicitly disclose the switch has a processor and a memory configured to store instructions for execution for execution by the processor for performing the steps cited in the claim. However, Maas discloses a telecommunications switch that comprises a line card (see col. 4, lines 57-58) that comprises a processor (microcontroller, see element 26, Fig. 2) for controlling the switch according to settings in a customer settings table (a memory for storing instructions for execution by a processor, see col. 5, lines 42-47).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the switch, methods, means and processes of Goldman with the teaching of a switch using a processor to execute the instructions stored in a memory such that Goldman's switch will comprise a processor to execute the instructions stored in a memory for performing the steps of setting root port and root guard protected status discussed above. The motivation to do so is to provide the hardware components for implementing the root port and root guard protected setting functions for the switch disclosed in Goldman.

Regarding claims 15-18, Goldman discloses a layer 2 switch (**a switch such as a bridge**, see lines 21-22, col. 5, and A1, Fig. 3) in a computer network (**a network**, see lines 15-16 and 39-40, col. 5, and Fig. 3; note that element 30 is core network and element A1 is customer network in Fig. 3), comprising methods and processes to provide:

a plurality of ports (**see perimeter port coming out of switch A1 and connecting switch A0 and perimeter port coming out of switch A1 and connecting switch A2**, Fig. 3), at least one port of said plurality of ports capable of being set to a status of root guard protected (RG status) (**switch A1 is set with a particular priority value that is greater than zero according to the distance-to-core method and a priority value greater than zero is interpreted as root guard protected status; note that a priority value only priority value of zero would be considered as candidate for the choice of root**, see lines 60-67, col. 6);

first circuits as the means for running the spanning tree protocol (STP) in said layer 2 switch (**a digital electronic circuitry for implementing the invention, comprising running the conventional spanning tree algorithm to determine the MAC address of each switch**, see lines 61-67, col. 5 and lines 61-67, col. 8), said STP capable of selecting said at least one port as either a designated port or as a root port (**the switch that happens to have the lowest MAC address will be given the highest priority and thus will be chosen as the spanning tree's root**, see lines 65-67, col. 5 and line 1, col. 6);

second circuits as the means for running root guard protocol (**a digital electronic circuitry for implementing the invention, comprising the exchange heartbeat protocol frames between switches for determining the distance-to-core/priority value**, see lines 61-67, col. 8 and lines 41-50, col. 6), and said root guard protocol (**heartbeat protocol**) determining

whether or not a port set to RG status has been selected by STP as a root port (**a digital electronic circuitry for implementing the invention, comprising exchanging and reconciling heartbeat frames for determining both the priority value (RG status) and MAC address where the lowest MAC address would be selected by STP as the root**, see lines 10-13, col. 7).

Goldman does not explicitly disclose using blocking circuits as the means to set said at least one port into blocked status, said blocking circuits setting said at least one port into blocked status in response to said at least one port being both in root guard protected status and selected by STP as a root port.

However, Goldman discloses that the state information made available to switches through the heartbeat protocol can be used to reconfigure a switch's port from forwarding state to blocking state (see lines 1-6 and 61-67, col. 8). It is interpreted that when the switch disclosed in Goldman has a non-zero distance-to-core value greater than zero, the switch will be considered to obtain a root guard protected status. This non-zero distance-to-core value is interpreted as the root guard status. When non-zero priority values are assigned to a switch to indicate the switch obtains a root guard protected status, all the ports that are associated with that switch will also considered to have root guard protected status because a switch transmits and receives data via its ports. As a result, having a switch that has root guard protected status will teach/suggest that all the ports will have root guard protected status. Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to modify the switch of Goldman such that the port state of the switch with priority value greater than one (root guard protected status) would be reconfigured from a forwarding state to a blocking state by a digital electronic circuitry such as the port status change due to the heartbeat protocol and the

digital electronic circuitry taught by Goldman. The motivation to do so is to center the spanning tree at the network's core to provide significant increases in the speed and efficiency with which the network traffic can be handled because the higher volume of network traffic passing through or near the root is processed by the highest bandwidth resources in the network.

Goldman discloses all the aspects of the claimed invention set forth in the rejection of claim 14 above, except fails to explicitly show the processor and memory reside on a linecard of a switch. However, Maas discloses a telecommunications switch that comprises a line card (linecard, see col. 4, lines 57-58) that comprises a processor (microcontroller and central processing unit, see element 26, Fig. 2) for controlling the switch according to settings in a customer settings table (a memory for storing instructions for execution by a processor, see col. 5, lines 42-47). The motivation to do so is allow customer specific settings to be stored in a erasable non-volatile memory so that the microcontroller is programmed to implement the customer settings for the switch disclosed in Goldman.

Response to Arguments

7. Applicant's arguments filed on 6/23/2004 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention (i.e., "at least one port of said plurality of ports capable of being set to a status of root guard protected"), it is noted that the features upon which applicant relies are indeed disclosed by Goldman. In particular, when switch disclosed in Goldman has a non-zero distance-to-core value greater than zero, the switch will be considered to obtain a root guard

protected status. This non-zero distance-to-core value is interpreted as the root guard status recited in claim 1. When non-zero priority values are assigned to a switch to indicate the switch obtains a root guard protected status, all the ports that are associated with that switch will also considered to have root guard protected status because a switch transmits and receives data via its ports. As a result, having a switch that has root guard protected status will teach/suggest that all the ports will have root guard protected status, which reads on the limitation "at least one port of said plurality of ports capable of being set to a status of root guard protected" as recited in claim 1.

In addition, the Applicant argues that Goldman also fails to suggest blocking a port based on whether the port is "both in root guard protected status and selected by STP as a root port." First, it is noted by the Examiner the Applicant first admitted that the Goldman reference discloses the second part of the limitations, which is "blocking a port based on whether the port is selected by STP as a root port" on page 16, lines 17-21 of the Remarks/Arguments (Goldman may block traffic through its root port, see col. 7, lines 62 – col. 8, line 11). In response to the Applicant's argument that the Goldman reference fails to teach the first part of the limitations, which is blocking a port is based on whether the port is in root guard protected status, the same reasoning discussed in the previous paragraph applies here. That is, when a switch obtains a root guarded protected status, all the ports will also obtain a root guard protected status because a switch transmits and receives data via its ports. By the same token, when a switch is selected as a root switch, one or more of its ports will also become a root port. It is interpreted that when a switch disclosed in Goldman obtains non-zero distance-to-core value is greater than zero, the switch will be considered to have obtained a root guard protected status and to be a root switch,

and thus one of the ports in the root switch will have the root guard protected status and be selected as the root port. Therefore, claim 1 stands rejected as being unpatentable under 35 U.S.C. 103(a) over Goldman.

Allowable Subject Matter

8. Claim 20 is allowed.

Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and if the objection to claim 11 described above can be overcome.

The following is a statement of reasons for the indication of allowable subject matter:

In claim 5, the computer network, wherein two or more processes of said first process, second process, third process, and fourth process is the same process.

In claim 20, a switch, comprising:

a memory configured to store a data structure containing one or more entries, said entries having a "state" field and a "role" field, said state field having a value of "blocked" or a value of "forwarding" said data structure having,

a first entry having the role field set to "root port" and the state field set to forwarding;

a second entry having the role field set to "designated port" and the state field set to forwarding;

a third entry having the role field set to "blocked port" and the state field set to blocked; and,

a fourth entry having the role field set to "root inconsistent port" and the state field set to blocked; and,

a processor to write and read said data structure in implementing a root guard protocol.

Conclusion

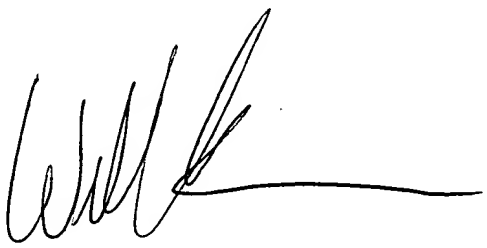
9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 571-272-3141. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 571-272-3134. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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